Data infrastructure for the energy economy

UtilityAPI

UtilityAPI is a universal API for energy data.

Our mission is to create a secure and standardized data infrastructure for the evolving energy economy.

We are introducing behind-the-meter data access requirements to support and deploy energy efficiency, solar, storage and other technologies.

Who we serve

Our Users

- Four out top five distributed solar (commercial and residential)
- Most of the top distributed energy storage companies
- Many energy efficiency and building management companies
- Energy auditing/consulting firms
- Cities for open dataset initiatives
- Energy apps and software platforms
- Only third party to build integrations with all current/scheduled Green Button Connect implementations
- Compliant with the U.S. DOE DataGuard privacy standard

DataGuard
Energy Data Privacy Program

What we do

Transparent

- Facilitate data sharing among utilities, account holders, third parties
- Specialize in direct customer authorization and streamlined consent
- Utility coverage includes ~25% of electricity meters in U.S.

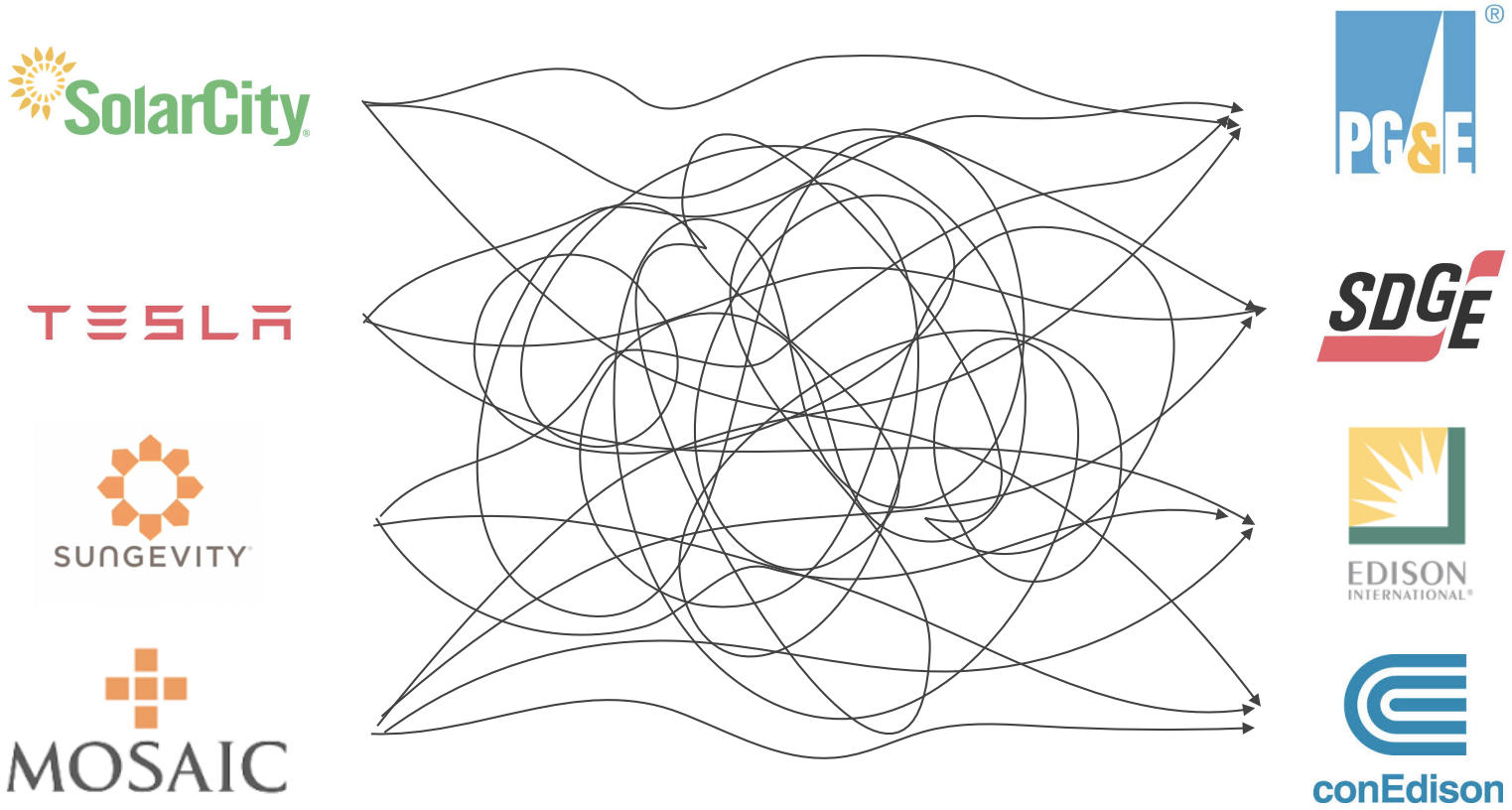
Technology

- Excellence in customer service and user experience
- Data flow is synchronous, automated and accurate
- Split-stack design enables revocable access to our end-users

Savings

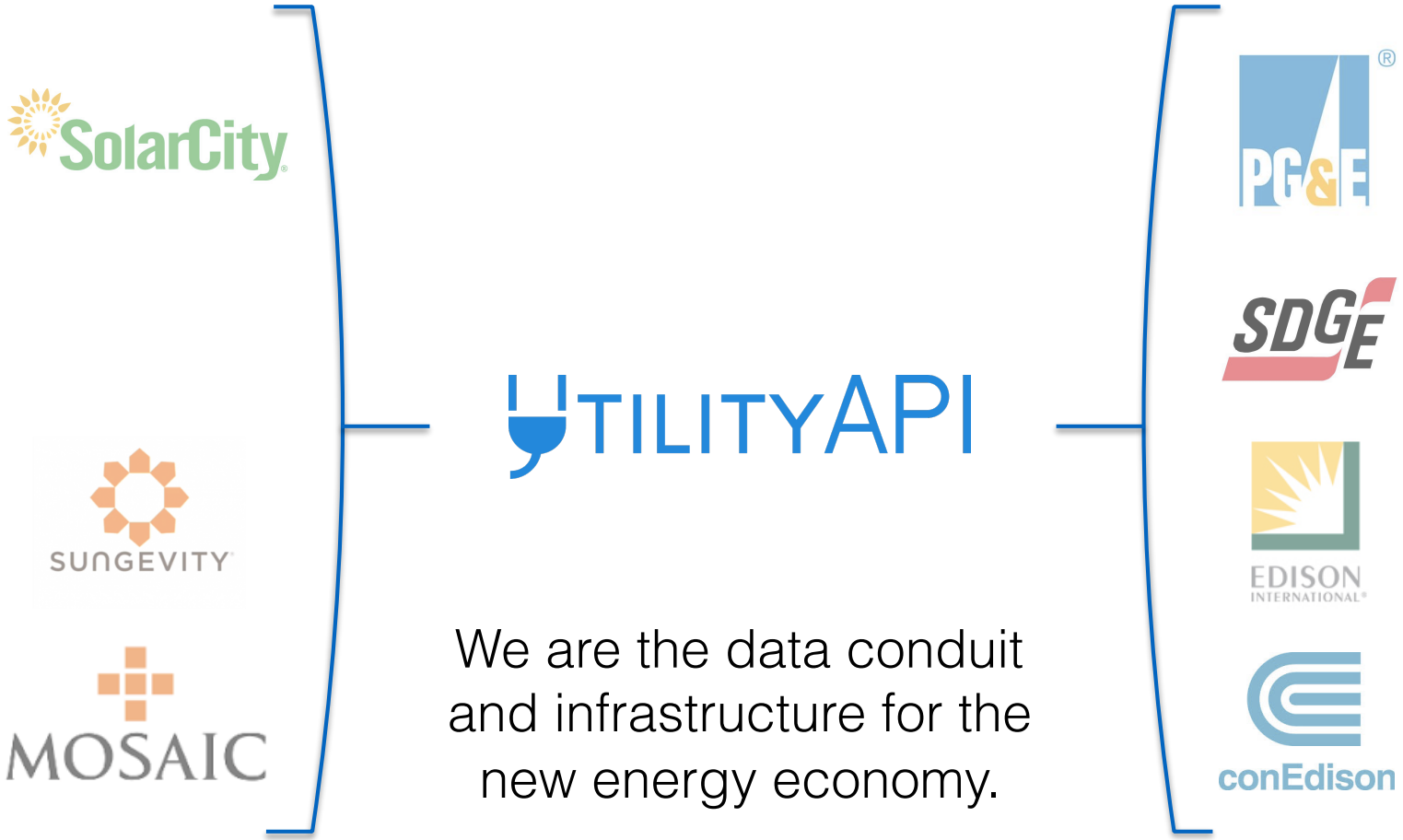
- We serve as a trusted data intermediary with best-in-class uptime, at a lower cost to ratepayers and with optimized user experience.
- We estimate savings of upwards of $2 million annually to ratepayers as we reduce manual data requests utilities have to process.

UtilityAPI supports the ecosystem…



Collecting, facilitating & sharing utility data is challenging.

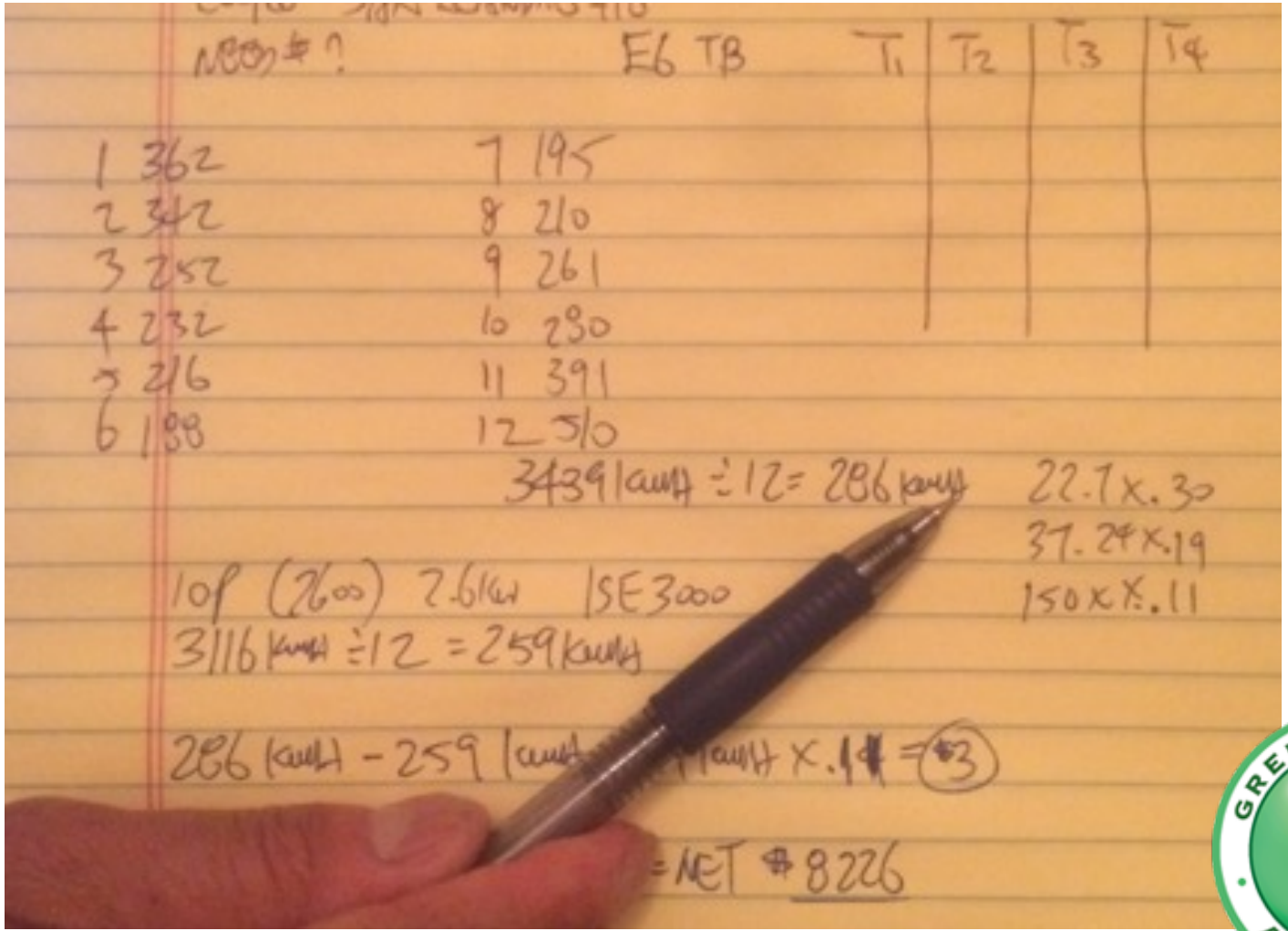
…by creating a standard solution



Similar models to Twilio (telecom) and mint.com (finance)

The problem

Green Button is a strong step in the right direction, but we must keep pushing standards forward to meet market requirements and reduce data request costs for ratepayers.



UtilityAPI: A Unified Interface

UtilityAPI is a unified interface for electric utilities

UTILITYAPI

Utility Green Button Implementations

PG&E

Southern California Edison

SDGE

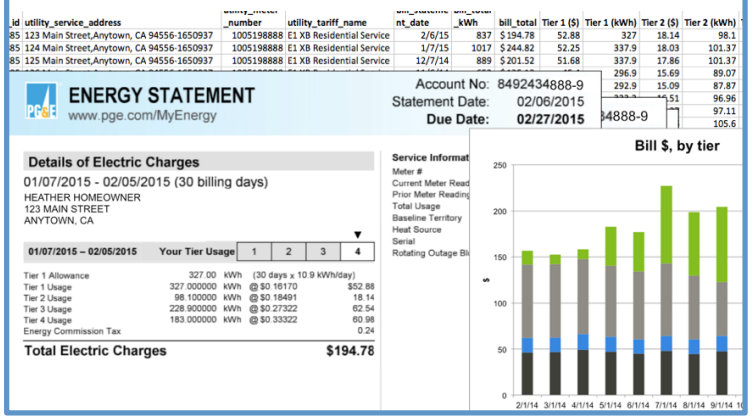
Xcel Energy

EVERSOURCE

conEdison

Green Button and other data

DER companies:
Solar
Storage
Energy management



id	utility_service_address	_number	utility_tariff_name	nt_date	_kWh	bill_total	Tier 1 ($)	Tier 1 (kWh)	Tier 2 ($)	Tier 2 (kWh)
85	123 Main Street,Anytown, CA 94556-1650937	1005198888	E1 XB Residential Service	2/6/15	837	$194.78	52.88	327	18.14	98.1
85	124 Main Street,Anytown, CA 94556-1650937	1005198888	E1 XB Residential Service	1/7/15	1017	$244.82	52.25	337.9	18.03	101.37
85	125 Main Street,Anytown, CA 94556-1650937	1005198888	E1 XB Residential Service	12/7/14	889	$201.52	51.68	337.9	17.86	101.37
								296.9	15.69	89.07
								292.9	15.09	87.87
										96.96
										97.11
										105.6

ENERGY STATEMENT
www.pge.com/MyEnergy

Account No: 8492434888-9
Statement Date: 02/06/2015
Due Date: 02/27/2015

Details of Electric Charges
01/07/2015 - 02/05/2015 (30 billing days)
HEATHER HOMEOWNER
123 MAIN STREET
ANYTOWN, CA

01/07/2015 – 02/05/2015	Your Tier Usage	1	2	3	4

Tier 1 Allowance	327.00	kWh	(30 days x 10.9 kWh/day)	
Tier 1 Usage	327.000000	kWh	@ $0.16170	$52.88
Tier 2 Usage	98.100000	kWh	@ $0.18491	18.14
Tier 3 Usage	228.900000	kWh	@ $0.27322	62.54
Tier 4 Usage	183.000000	kWh	@ $0.33322	60.98
Energy Commission Tax				0.24
Total Electric Charges				**$194.78**

Bill $, by tier

Use cases requisite for DRP

Customer acquisition	Closing	Customer management
Does the customer qualify?	De-risking the investment with 12+ months of bills	Validate energy savings + how can we optimize energy use over time?
Import into proposal tool	lower FICO requirements?	
How many solar panels are needed?	Official address for interconnection?	+referrals

Residential and commercial

Use cases benefit all parties

How many solar panels are needed on a home?

What's the payback of commercial energy efficient upgrades?

How much did someone save by going solar?

How can we optimize energy use over time?

Customer acquisition → **Closing** → **Customer management**

Impact Level: 5-10% overall cost reduction in EE, Solar, etc.

Asks

1. Standardize the rigor and process by which authorization to access energy usage and billing data is granted.

2. Require utilities to redirect to or host a cloud-based user interface for data sharing with agreed upon, consumer-centric login credentials

3. Standardize availability of a requisite set of data

4. Impose security standards for data sharing and data storage

Authorization Process

Standardize the rigor and process by which authorization to access energy usage and billing data is granted.

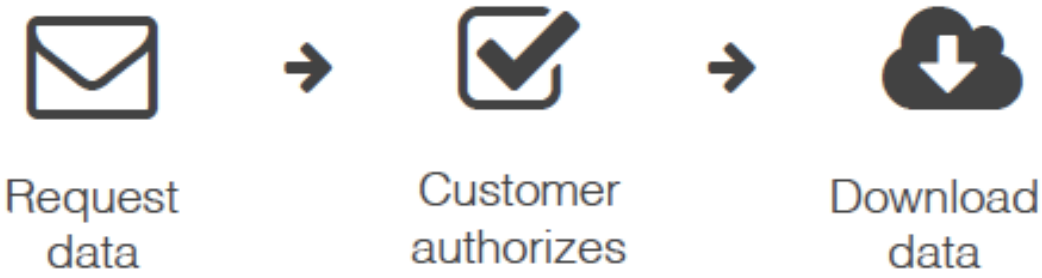
Utilities have implemented GB interfaces with varied interpretations;

Market requires an industry best-practice OAuth user experience deployed to ***facilitate legal, secure, synchronous, authorized access to energy billing and usage data***

Legal third-party agency standard that meets requirements under AB1274, Civil Code Section 1798.98, U.S. DOE DataGuard best practices, and other applicable standards.

DataGuard
Energy Data Privacy Program

Authorization: simple & transparent

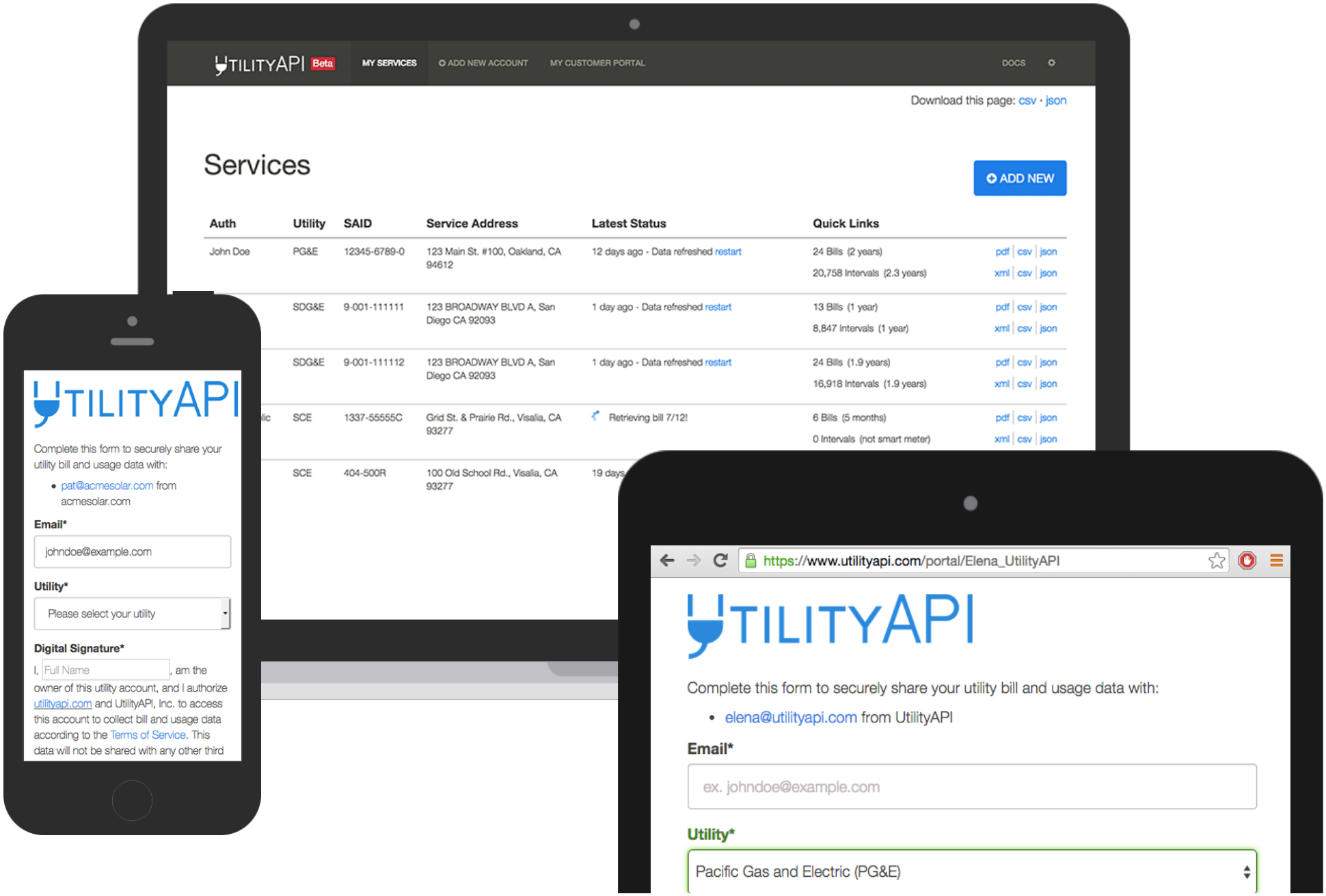


Fully functional SaaS offering

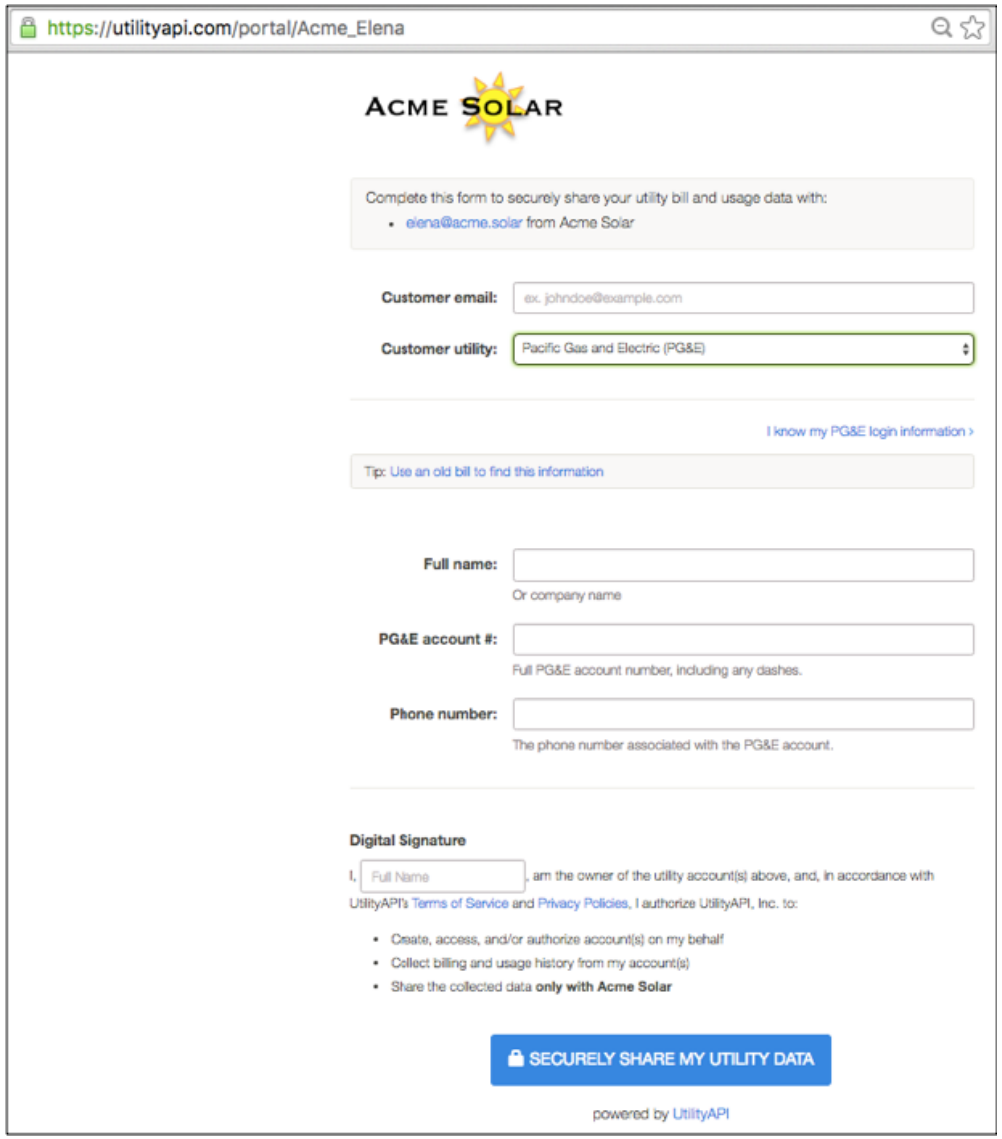
UTILITYAPI →

SDKs and API available for integration with all parties

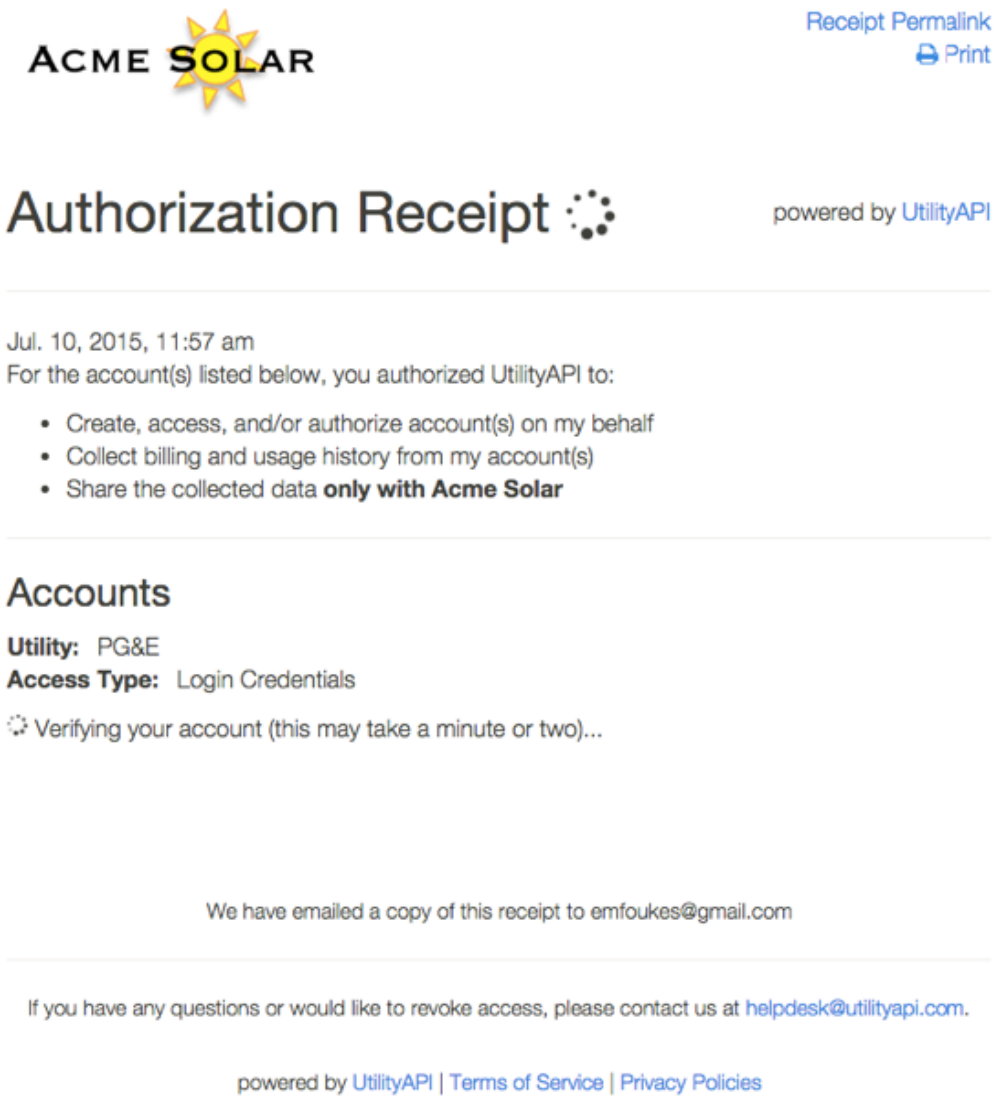
Dashboard and REST API



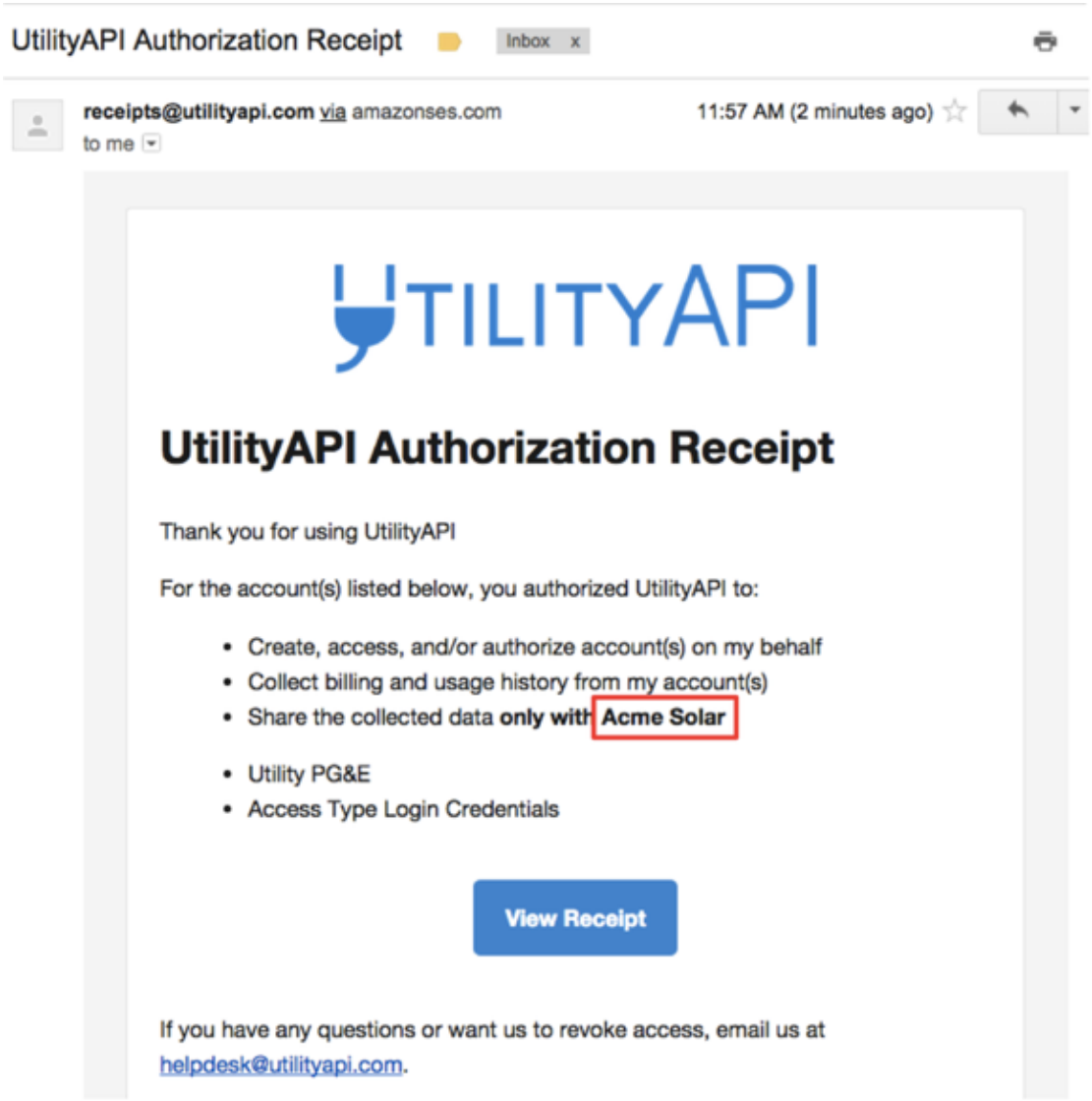
Authorization Form



Authorization Receipt



Email Confirmation



UtilityAPI Authorization Receipt Inbox x

receipts@utilityapi.com via amazonses.com 11:57 AM (2 minutes ago)

to me

UTILITYAPI

UtilityAPI Authorization Receipt

Thank you for using UtilityAPI

For the account(s) listed below, you authorized UtilityAPI to:

- Create, access, and/or authorize account(s) on my behalf
- Collect billing and usage history from my account(s)
- Share the collected data **only with Acme Solar**

- Utility PG&E
- Access Type Login Credentials

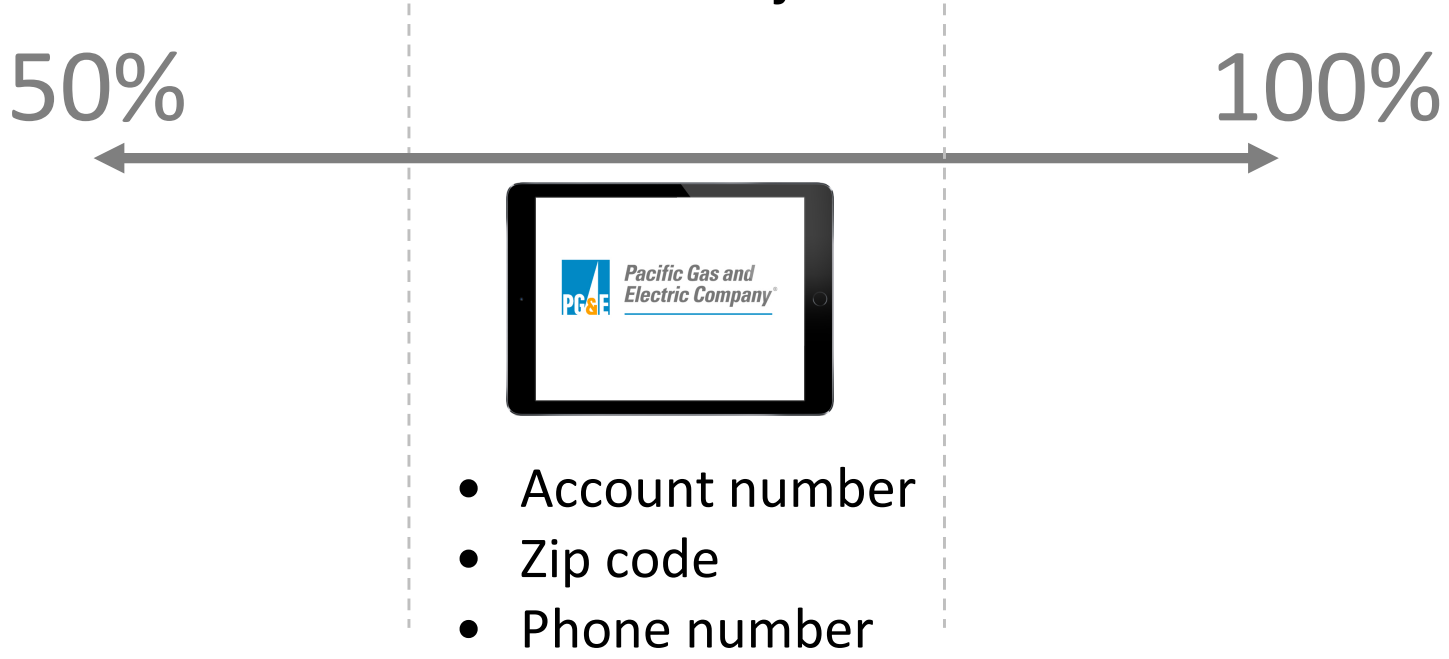
View Receipt

If you have any questions or want us to revoke access, email us at helpdesk@utilityapi.com.

User interface

Require utilities to redirect to or to host a cloud-based user interface for data sharing that deploys ***consumer-centric login credentials***

Many utility account holders would prefer to appoint a third party agent as they do not have the time, desire or comfort with online utility interfaces.



Requisite Data Set

Standardize availability of a requisite set of data

The Customer Data Sharing standard should be updated to provide the requisite data set.

The GreenButton Standard (GB) is a flexible, voluntary standard and implementation by CA IOUs do not meet the needs of the DERs.

UtilityAPI, to date, has been the only automated and DataGuard compliance source of data that DERs require, in addition to providing a high level of service to DERs and utility account holders.

Small businesses cannot security qualify for Green Button Connect.

We are active participants in the GreenButton Alliance.

Requisite Data Elements

- **Interval Usage Data**
  - Interval Usage Data
  - Interval Collected by Meter
- **Meter Information**
  - Meter Number
  - Make
  - Model
  - CT Ration/Qty
  - Form
  - Multiplier
- **Program Participation**
  - SCE Demand Response Program
  - Est Date of customer eligibility
  - Eligible date of leave Program
- **Customer Information**
  - Service Address
  - Customer Account Number
  - Customer LSE
  - Customer MDMA
  - Customer MSP
- **Billing Information**
  - Delivery Charges-Energy
    - Winter-Mild Peak kWh and charges
    - Winter-Off Peak kWh and charges
    - Winter-Super Off Peak kWh and charges
    - Summer-Mild Peak kWh and charges
    - Summer-Off Peak kWh and charges
    - Summer-Super Off Peak kWh and charge
    - Summer-On Peak kWh and charge
  - Generation Charges-Energy
    - Winter-Mild Peak kWh and charges
    - Winter-Off Peak kWh and charges
    - Winter-Super Off Peak kWh and charges
    - Summer-Mild Peak kWh and charges
    - Summer-Off Peak kWh and charges
    - Summer-Super Off Peak kWh and charge
    - Summer-On Peak kWh and charge
  - Customer Service Voltage
  - Billing Period
  - Billing Rate Schedule
  - Customer Billing Date
  - Rotating Outage Group
  - Delivery Charges
  - Facilities Related Demand Charges
  - DWR Bond Charges
  - Customer Charge
  - Power Factor adjustment
  - DWR energy credit (calculation and credit value)
  - UUT exemption status
  - State Tax
  - Time Related kW
  - Time Related kW Charges
  - Transmission Charges
  - Distribution Charges
  - Nuclear Decommissioning Charges
  - Public Purpose Programs Charges
  - Franchise Fee
  - Sub-load Aggregation Point
  - Pricing Node
  - Two Digit Meter Read Cycle Number

Requisite Security Standards

- Data cannot be used for any purpose without receipt of ***explicit written authorization*** of the utility account holder.
- 100% of authorization process be conducted over ***HTTPS***
- ***Encrypt access credentials*** automatically and immediately
- Store access credentials in an encrypted state using OpenPGP or HSM-backed
- Do not write decrypted access credentials to disk; hold for minimum time
- Keep audit logs of decryptions
- Handle credentials using ***split-stack design***:
  - Servers with permissions to access stored credentials do not have permissions to decrypt them;
  - Servers with permissions to decrypt credentials do not have permissions to request them from the data store;
  - Reduce application on servers with permissions to decrypt to minimum applications required to perform the authorized access
- ***Do not transfer utility account holder data outside the United States***.
- Terms ***maintaining data ownership with the utility account holder*** on the provider's servers (e.g. UtilityAPI), such that the account holder has a ***reasonable expectation of privacy*** & data is not a business record.

Conclusion


Powered by
SunShot
U.S. Department of Energy


GREEN BUTTON
ALLIANCE


ADVANCED
ENERGY
ECONOMY


DataGuard
Energy Data Privacy Program


Center for
Sustainable Energy


Mission Data


CALSEIA
CALIFORNIA SOLAR ENERGY
INDUSTRIES ASSOCIATION


SEIA
Solar Energy
Industries
Association®


SIEMENS


POWERHOUSE

UtilityAPI

Data infrastructure for the new energy economy

Heidi Lubin
EVP, UtilityAPI
heidi@utilityapi.com

UTILITYAPI

Download utility bill data. Fast.

Appendix

Requisite Authorization Functionality

Authorization updates needed for utility GBC to be used (all of the below are possible in GBC spec):

* Embeddable inside our widget (via iframe or javascript sdk), so it can be shown when the utility is selected in the widget dropdown.
* Allows user to register on the spot inside the embed if they don't have an utility online account, then continue the authorization process.
* Straight to OAuth screen with scope string pre-generated (i.e. we would build the scope string bills/intervals/timespan/etc.), bypassing optional Scope Selection process (which can't handle the state parameter).
* State parameter support to track user pre/post OAuth handshake.
* Declined OAuth still redirects to UtilityAPI with error parameter.
* If already approved UtilityAPI, prompted to re-authorize without having to fill out a utility's OAuth form again (i.e. simple Yes/No button).
* Synchronous API (i.e. GBC REST API) or asynchronous push less than 90 sec turnaround.
* All below data elements included in API or push payload.

Ecosystem services

Customer Acquisition

Qualify leads faster with baseline bill amounts, PDFs, and kWh.

More ▸

Baselining

Accurate baseline electricity demand at a site or across properties

More ▸

RFPs

One complete set of data for all RFP participants

More ▸

Financing

Collect the documents you need for financing

More ▸

Measurement and Verification

Measure savings with actual data, not algorithms

More ▸

Utilities

Meet data needs of Public Purpose Programs

More ▸

Macro trends

UtilityAPI is fundamentally changing how electricity assets are used and valued.

- **RPS** - DERs are not included because regulators and utilities had no way of measuring or valuing distributed generation.
- **NY REV** - We have been asked to be at the table and contribute solutions to New York's Vision of its Energy Future. They are completely reimagining the grid.
- **EPA 111d** - Energy efficiency and demand response are part of every state's plan, which will mean EE and DR will be measured and verified at scale. 111d contributes to goals set at COP21.
- **AB802** - Reporting requirements of CA IOUs: they must manage consent and provide data to property managers.
- **De-risking solar asset values** - Guaranteed savings for DERs: Distributed asset holders do not know if a particular installation is saving money for that homeowner or business owner. Knowing in the owner is saving money with solar de-risks the asset value to financial portfolio managers.

DER - Distributed energy resource: Solar, storage, demand response
RPS: Renewable portfolio standard